is estimated that there are less than one sixteenth as many S cones as either L or M cones in the retina.

[0032] Since short wavelength sensing cells (S-cones) do not occur in the central region of the fovea, it is well known that it is visually impossible to attain focus on an object emitting only shortwave length (e.g. blue only) light. The elements of the image are defocused by virtue of the achromatic characteristics of the lens of the eye and also by the absence of appropriate sensor cells within the prime focus region of the retina.

[0033] The combination of defocused short wavelength (blue) light and lack of S cones in the area of highest visual acuity results considerably lower spatial ~~and temporal~~ sensitivity of the human eye to blue light. Blue objects must be substantially larger in size to be perceived clearly by the eye. These factors appear to make difficult, if not impossible to derive depth information from purely blue elements.

[0034] A luminous blue border around a stereoscopic image creates a zone of depth ambiguity about the location of the screen on which the stereoscopic image is displayed image. This ambiguity can be employed to suppress and ~~possibly~~ inhibit stereoscopic pinning and is employed for this purpose in this patent.

[0035] Figure 1 teaches that there is little overlap in spectral response between S- and either L- or M- cones at wavelength at 450 nm or less. As such, the luminous border described should emit light at approximately this or shorter wavelengths.

Claims

[claim 1] (Currently amended)

An apparatus for preventing loss of depth perception by a viewer due to ~~depth~~ stereoscopic pinning, said apparatus comprising:

a) a stereoscopic image display for stereoscopically generating an object perceived by said viewer at a perceived depth;

b) a periphery around said stereoscopic image display;

c) ~~an~~ a stereoscopic anti-pinning element positioned in said periphery for projecting radiation comprising a blue wavelength to said viewer and thus creating an image border with ambiguous depth location, thereby preventing said viewer from ~~depth~~ stereoscopic pinning at border of said stereoscopic image display.

[claim 2] (Currently amended)

The apparatus of claim 1, wherein said stereoscopic anti-pinning element is an active emitter of said radiation.

[claim 3] (Original)

The apparatus of claim 2, wherein said active emitter is a light source mounted in said periphery

[claim 4] (Currently amended)

The apparatus of claim 1, wherein said stereoscopic anti-pinning element is coextensive with said periphery.

[claim 5] (Currently amended)

The apparatus of claim 1, wherein said object is perceived by said viewer at a perceived depth within a field of view and said stereoscopic anti-pinning element is positioned at a location in said periphery where said object appears to said viewer to approach a border of said field of view.

[claim 6] (Original)

The apparatus of claim 1, wherein said stereoscopic image display comprises at least one screen and stereoscopically generates said object from elements projected on said at least one screen.

[claim 7] (Currently amended)

The apparatus of claim 1, wherein said stereoscopic image display augmented with ~~an~~ a stereoscopic anti-pinning element positioned in said periphery for projecting radiation comprising a blue wavelength to said viewer is activated only when objects approach the ~~border~~ edge of the ~~viewer's field of view~~ stereoscopic image.

[claim 8] (Currently amended)

The apparatus of claim 1, wherein said stereoscopic image display augmented with an stereoscopic anti-pinning element positioned in said periphery for projecting radiation comprising a blue wavelength to said viewer vary intensity as objects approach the border of the viewer's field of view.

[claim 9] (Currently amended)

The apparatus of claim 6, wherein said image display comprises a multiplicity of display screens having multiple interfaces, and additional stereoscopic anti-pinning elements positioned at said interfaces for projecting radiation comprising said blue wavelength to said viewer.

[claim 10] (Currently amended)

The apparatus of claim 1, wherein said blue wavelength comprises wavelengths inducing depth ambiguity in said viewer, thereby preventing said viewer from ~~depth~~ stereoscopic pinning.

[claim 11] (Currently amended)

A method for preventing loss of depth perception by a viewer due to ~~depth~~ stereoscopic pinning, said method comprising:

a) stereoscopically generating an object on a stereoscopic image display, such that said object is perceived by said viewer at a perceived depth;

b) providing a periphery around said stereoscopic image display;

c) positioning ~~an~~ a stereoscopic anti-pinning element in said periphery for projecting radiation comprising a blue wavelength to said viewer, thereby preventing said viewer from ~~depth~~ stereoscopic pinning at said stereoscopic image display.

[claim 12] (Currently amended)

The method of claim 11, wherein said step of stereoscopically generating said object employs a stereoscopic technique selected from the group consisting of:

a) Time multiplexed presentation of left and right image in conjunction with apparatus synchronized with said presentation so that the left eye views the left image when said left image is displayed and right eye views the right image when said right image is displayed;

b) Spatially multiplex presentation of left and right image combined with a viewing apparatus that enables the right eye to see the right image and the left eye to see the left image;

c) Simultaneous presentation of both left and right images such that the left eye sees the left image and the right eye sees the right image by virtue of the cross-polarization of the light and simultaneous use of polarized viewing device such that each eye sees one of the two cross polarized images;

d) simultaneous presentation of both left and right images such that the left eye sees the left image and the right eye sees only the right image by virtue of color encoding differences between each image and simultaneous use of color matched viewing device such that each eye sees one of the two color encoded images ~~(e.g. anaglyph)~~;

e) Time multiplexed presentation of left and right image in conjunction with a polarizing device interposed between the display image and the viewer, capable of switching the polarization of the light passing through and thus providing time multiplexed presentation of left image with one polarization and the right image with a crossed polarization combined with a viewing apparatus that enables the right eye to see the right image and the left eye to see the left image;

f) Stereoscopic images created by use of intensity attenuating viewing apparatus such that one eye sees a darkened image and the other eye sees a brightened image thus causing the visual system to take longer to process the darkened image than the brightened image and thus matching two precepts at slightly different points in time ~~(e.g. Purflich effect)~~;

g.) Stereoscopic images created by using a multiplicity of stacked display surfaces that vary slightly in distance to the viewer causing said viewer to perceived depth by virtue of the visual system seeing elements on said multiplicity of stacked display surfaces as positioned at different distances;

h) Stereoscopic display devices designed such that each eye is presented with a different image such that the left eye sees a left image and the right eye sees a right image, said display device created by use of optical components that direct each image to the eye that is intended to see that image ~~(e.g. virtual reality goggles)~~;

i) Any display device capable of inducing a stereoscopic illusion.

[claim 13] (Currently amended)

The method of claim 11 wherein said viewer perceives said object within a field of view having a border, and said stereoscopic anti-pinning element is positioned such that it appears to said viewer near said border.

[claim 14] (Currently amended)

The method of claim 11 wherein said stereoscopic anti-pinning element emits radiation comprising said blue wavelength.

[claim 15] (Currently amended)

The method of claim 11,wherein said stereoscopic anti-pinning element emits radiation comprising said blue wavelength are only employed when objects approach the border of the viewer's stereoscopic field of view.

[claim 16] (Currently amended)

The method of claim 11,wherein said stereoscopic anti-pinning element emits radiation comprising blue wavelength of light vary in intensity as objects approach the border of the stereoscopic image. ~~viewer's field of view~~

[claim 17] (Currently amended)

A method for preventing loss of depth perception by a viewer due to ~~depth~~ stereoscopic pinning, said method comprising:

a) stereoscopic generating an object being perceived by said viewer at a perceived depth within a field of view having a border;

b) positioning ~~an~~ a stereoscopic anti-pinning element such that said viewer perceives said stereoscopic anti-pinning element near a border of said field of view, thereby preventing said viewer from ~~depth~~ stereoscopic pinning.

[claim 18] (Currently amended)

The method of claim 17 wherein said step of stereoscopically generating said object employs a stereoscopic technique selected from the group consisting of:

a) Time multiplexed presentation of left and right image in conjunction with apparatus synchronized with said presentation so that the left eye views the left image when said left image is displayed and right eye views the right image when said right image is displayed;

b) Spatially multiplex presentation of left and right image combined with a viewing apparatus that enables the right eye to see the right image and the left eye to see the left image

c) Simultaneous presentation of both left and right images such that the left eye sees the left image and the right eye sees the right image by virtue of the cross-polarization of the light and simultaneous use of polarized viewing device such that each eye sees one of the two cross polarized images;

d) simultaneous presentation of both left and right images such that the left eye sees the left image and the right eye sees only the right image by virtue of color encoding differences between each image and simultaneous use of color matched viewing device such that each eye sees one of the two color encoded images ~~(e.g. anaglyph)~~;

e) Time multiplexed presentation of left and right image in conjunction with a polarizing device interposed between the display image and the viewer, capable of switching the polarization of the light passing through and thus providing time multiplexed presentation of left image with one polarization and the right image with a crossed polarization combined with a viewing apparatus that enables the right eye to see the right image and the left eye to see the left image;

f) Stereoscopic images created by use of intensity attenuating viewing apparatus such that one eye sees a darkened image and the other eye sees a brightened image thus causing the visual system to take longer to process the darkened image than the brightened image and thus matching two precepts at slightly different points in time ~~(e.g. Purflich effect)~~;

g.) Stereoscopic images created by using a multiplicity of stacked display surfaces that vary slightly in distance to the viewer causing said viewer to perceived depth by virtue of the visual system seeing elements on said multiplicity of stacked display surfaces as positioned at different distances;

h) Stereoscopic display devices designed such that each eye is presented with a different image such that the left eye sees a left image and the right eye sees a right image, said display device created by use of optical components that direct each image to the eye that is intended to see that image ~~(e.g. virtual reality goggles)~~;

i) Any display device capable of inducing a stereoscopic illusion.

[claim 19] (Original)

The method of claim 17 wherein said object is projected on a stereoscopic image display

[claim 20] (Currently amended)

The method of claim 19 wherein said stereoscopic image display comprises a periphery and said stereoscopic anti-pinning element is positioned in said periphery.

[claim 21] (Currently amended)

The method of claim 17 where ~~a~~ stereoscopic anti-pinning methods are only employed when objects approach the border of the viewer's field of view.

[claim 22] (Currently amended)

The method of claim 17, wherein said stereoscopic anti-pinning methods vary in intensity as objects approach the border of the viewer's field of view.